

THE QUICK DATA DRIVE

MODEL 8500

User's Manual



QUICK PROGRAM SERIES

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- RELOCATE THE COMPUTER WITH RESPECT TO THE RECEIVER
- MOVE THE COMPUTER AWAY FROM THE RECEIVER
- PLUG THE COMPUTER INTO A DIFFERENT OUTLET SO THAT COMPUTER AND RECEIVER ARE ON DIFFERENT BRANCH CIRCUITS.

"IF NECESSARY, THE USER SHOULD CONSULT THE DEALER OR AN EXPERIENCED RADIO/TELEVISION TECHNICIAN FOR ADDITIONAL SUGGESTIONS. THE USER MAY FIND THE FOLLOWING BOOKLET PREPARED BY THE FEDERAL COMMUNICATIONS COMMISSION HELPFUL: 'HOW TO IDENTIFY AND RESOLVE RADIO-TV INTERFERENCE PROBLEMS'. THIS BOOKLET IS AVAILABLE FROM THE U.S. GOVERNMENT PRINTING OFFICE, WASHINGTON, DC 20402, STOCK NO. 004-000-00345-4.

TABLE OF CONTENTS

PREFACE

ORGANIZATION OF THIS MANUAL

INTRODUCTION

WHAT IS A MICROWAFER

WHAT IS A QUICK DATA DRIVE

WHAT IS QDS

WHAT IS A FILE

PROGRAM AND SEQUENTIAL FILES

HOW MANY FILES MAY I HAVE

WHAT NAMES CAN I USE FOR FILES

HOW DOES QDS WORK

WHAT IS AN FMU

HOW ARE FILES STORED

CHAPTER 1 GETTING STARTED

REQUIRED EQUIPMENT

SETUP PROCEDURE SINGLE DRIVE

DUAL QUICK DATA DRIVES

QUICK DATA DRIVE PLUS C2N CASSETTE

STARTING QDS (TM)

SAMPLE SESSION

CHAPTER 2 QUICK OPERATING SYSTEM COMMANDS

COMMAND FORMAT CONVENTIONS

COMMAND PARAMETERS

COMMAND SUMMARY

CLOSE

GET #

INPUT #

LOAD

OPEN
PRINT #
SAVE
STATUS
VERIFY

CHAPTER 3 THE FILE MANAGER UTILITY

WHY A FILE MANAGER UTILITY?
STARTING THE FMU
ABORTING A COMMAND
COPYING FROM CASSETTE TO WAFER
COPYING FROM DISK TO WAFER
COPYING FROM WAFER TO WAFER
COPYING FROM WAFER TO CASSETTE
COPYING FROM WAFER TO DISK
DISPLAYING THE WAFER DIRECTORY
FORMATTING A MICROWAFER
CREATING A DOS WAFER
CLEANING THE QUICK DATA DRIVE
EXITING THE FMU

CHAPTER 4 HELPFUL HINTS

CARE OF YOUR MICROWAFERS (TM)
INSERTION, REMOVAL, AND LABELING OF
MICROWAFERS
WRITE-PROTECTION FOR MICROWAFERS
STORAGE CAPACITY AND ACCESS TIME
WAFER ACCESS TIME VS CAPACITY
ERROR MESSAGES
DOS AND FMU MEMORY MAPS

PREFACE

This reference-manual explains how to install and use the Quick Data Drive, the Quick Operating System and the File Management Utility. You should be familiar with the Commodore User's Guide for instructions on using the computer.

ORGANIZATION OF THIS MANUAL

This manual is organized into five sections:

INTRODUCTION: Explains the Quick Operating System, what files are, and the File Management Utility.

CHAPTER 1 — GETTING STARTED: Gives the steps for connecting the drive to the Commodore, loading in the Operating System, and shows a sample session.

CHAPTER 2 — QOS COMMANDS: Each of the Quick Operating System commands is described. Each command format is shown, along with the purpose of the command, and exceptions and examples.

CHAPTER 3 — FMU: Instructions are given on how to load and use the File Management Utility. Each FMU command is explained along with examples.

CHAPTER 4 — HELPFUL HINTS: Explains care of Microwafers, ways to speed up data transfers, and gives programming examples.

WHAT IS A MICROWAFER

A Microwafer is a small, removable mass storage cartridge containing up to 128K bytes of storage. It's rigid plastic case is rugged and may be carried in a shirt pocket, dropped, or it can be left on a desktop without fear of damage.

A sliding cover protects the magnetic media from abrasion and dirt. It automatically retracts upon insertion into the drive. Critical data may be protected from being overwritten by removing a write protect

tab on the side.

There is one label on the top which may be written upon. Another label on the front is visible when the wafer is in the drive.



**Picture of the Microwafer
figure 1.**

WHAT IS A QUICK DATA DRIVE

The Quick Data Drive is a mass storage peripheral which plugs into the cassette port on the Commodore and which contains the electronics and mechanics to run the Microwafer.

The unit is completely self contained needing no additional cables, power supplies or interfaces. No modifications to the Commodore are required.

A light on the front indicates when the motor is running in the drive and a "play" switch is used to turn on the drive when first powering up the system.

WHAT IS QOS

QOS is short for the Quick Operating System. It is a program which is read from a Microwafer into the Commodore computer.

QOS speeds up communication through the cassette port by a factor of 16 over the Datacorder. In many circumstances it is even faster than the disk drive.

QOS provides a set of file management commands like those on the Datacorder as well as adding file management which eliminates the need for manually searching for files or the need to press the "play" or "record" buttons.

HOW DOES QOS WORK

The MASTER QOS-WAFER contains a section which emulates a Datacorder. This slow speed "boot" reads in a program which switches to high speed and loads in the Quick Operating System and the File Management Utility.

Once these programs in the computer, the normal cassette type commands, such as LOAD and STORE run through QOS instead of through the built-in Datacorder routines. The QOS in effect takes over the Commodore

There are actually two sets of Quick Operating System and File Management Utility programs on the Master QOS wafer. One set is for the Commodore 64 and the other for the VIC 20. The software figures out which set of programs to load for the machine which you are using. Thus MASTER QOS wafers work on both the Commodore 64 and the VIC 20.

WHAT IS A FILE

The Quick Data Drive is used to read and write files on a Microwafer.

A file is data somewhat like a file folder in a filing cabinet. Each file has a name which is used to find the file when the data is to be retrieved.

Data in a file may be anything. It can be a computer program such as a game, or it may be a word processor text file, or a spread sheet.

PROGRAM AND SEQUENTIAL FILES

There are two types of files implemented on the Quick Data Drive. These are SEQUENTIAL files and PROGRAM files.

Sequential files are data files, read or written from an application program. These files are typically used for the data in spread sheets or the text in word processors.

Program files are Commodore programs which can be loaded in from the Microwafer and executed. Games are examples of programs.

HOW MANY FILES MAY I HAVE

Up to 255 files may be stored on a Microwafer. The total amount of data which may be stored depends upon the storage capacity of the Microwafer. Wafers from 16K bytes to 128K bytes are available.

WHAT IS AN FMU

The FMU is the File Management Utility program. It provides a menu of commands for copying files to and from disk, Microwafer, or the Datacorder. It also provides utilities for formatting a wafer (required before using a wafer), and for listing the names of the files on a wafer.

The FMU is a separate program from the QOS because the FMU is too big to keep in memory at all times. Therefore it is only loaded when needed.

The functions which are programmed in BASIC, such as OPEN, LOAD, STORE, and CLOSE are in QOS which stays in memory. The rest of the functions are in the FMU.

HOW ARE FILES STORED

Files are stored on the Microwafer, one after another. The filename is stored along with the file data.

When QOS is instructed to find a file, it searches through the files until it finds the correct one. Then it reads in the data.

When a new file is written out, QOS writes it after the last file on the wafer.

CHAPTER 1 GETTING STARTED

HOOING UP YOUR QUICK DATA DRIVE

REQUIRED EQUIPMENT

The Quick Data Drive plugs directly into the cassette port of the Commodore 64 or the VIC 20. The plug will only fit on the connector one way DO NOT FORCE IT.

SETUP PROCEDURE – SINGLE DRIVE

Hooking up the Quick Data Drive is easily accomplished by plugging the Quick Data Drive into the Cassette port of the computer as shown in figure 2a or 2b.



Picture of the VIC 20 and QDD
Figure 2a.



Picture of the Commodore 64 and QDD
Figure 2b.

DUAL QUICK DATA DRIVES

Two drives can be daisy-chained by using the expansion capability of the Quick Data Drive.

In order to hook up a second Quick Data Drive with the first Quick Data Drive, simply plug the cable of the second Quick Data Drive into the port of the first Quick Data Drive. This wiring is shown in Figure 3.



Figure 3
"Daisy-Chaining" Two Hard Drives

The drive hooked directly into the Commodore 64 is termed drive 0, while the additional second drive is termed drive 1.

QUICK DATA DRIVE PLUS DATACORDER

In order to hook up the Quick Data Drive in conjunction with a Data-corder, the only additional step required is to plug the Data-corder into the port of the Quick Data Drive. The wiring is shown in a diagram in figure 4.



Figure 4
Plugging Datacorder into Quick Data Drive

When the power is turned on the Commodore, the QOS program is not resident, it must be loaded in. To "boot" the QOS into the computer follow these steps:

- 1) Insert a QOS Wafer into the Quick Data Drive. If you have more than one Quick Data Drive, insert the Wafer into the drive plugged directly into the Computer's cassette port (drive 0).
- 2) Turn on the monitor and the Commodore 64 and wait for "READY"
- 3) While holding down the "SHIFT" key, press and release the "RUN/STOP" key.
- 4) When the screen reads "PRESS PLAY ON TAPE" press the play button on the rear of the Quick Data Drive. The screen will go blank as the computer searches for the "boot" program code.
- 5) The screen will give the message "FOUND QOS-HIT SPACE". Press the space bar or wait for the computer to time out (about 10 seconds). The screen will go blank again as the computer searches for the main QOS program.
- 6) After the QOS program is loaded, the screen will indicate that boot-up has been completed.

QUICK DATA DRIVE OPERATING SYSTEM

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SAMPLE SESSION

Let's say that you want to load in and run a game program, "REDBAR".

STEP 1

First power up the system, put the QOS wafer in the drive and hit the "SHIFT" and "RUN/STOP" keys.

STEP 2

Press play on the drive and wait for the operating system to be booted in.

STEP 3

Now insert the game tape in the drive.

STEP 4

Load the program as follows:

LOAD "REDBAR"

STEP 5

Wait for the program to load in then type RUN and you are off and running.

CHAPTER 2 QOS COMMANDS

COMMAND CONVENTIONS

In this manual, these conventions are used for specifying the allowable formats for commands:

Words in capital letters are keywords and must be input as shown.

Punctuation such as periods, commas and colons must be included as shown.

Items surrounded by brackets [] are optional and need not be input

Items in lowercase letters are required unless surrounded by brackets. Items separated by a slash (/) are choices one of which should be picked.

COMMAND PARAMETERS

In the DOS and FMU sections, references will be made to filenames, filenums, and varlists.

Each of these is defined below:

Filename is the name of a file. It must start with a letter. It is up to 12 characters in length. Any file name longer than 12 characters will be truncated.

The name can be in quotes such as "groceries", or it can be a single BASIC string variable such as NAME\$, or it can be an expression combining string variables such as NAME\$ + ".bee".

In the DOS commands, LOAD, SAVE, OPEN, and VERIFY, filenames are enclosed in QUOTES. In FMU commands, no quotation marks are required.

The filename may be prefaced by the drive number on which it resides, "D: GROCERIES" or "I: CHECKBOOK".

When loading or opening files, the filename may contain wildcards. A wildcard is a special character which will match with anything. "*" matches all character positions from the "*" position to the right. "?" matches any character in that position.

For example, if a wafer contains the files JUN, JAN, and JIM then

LOAD "JN"	will match JUN or JAN, whichever comes first
LOAD "J*"	will match JUN or JAN or JIM whichever comes first
LOAD "?A?"	will match JAN

A varlist is a list of variables used when reading or writing data from sequential files. For instance A, B\$, C is the varlist in PRINT# 1, A, B\$, C or INPUT# 1, A, B\$, C.

A filenum is a number between 0 and 255 assigned to a file by the OPEN statement. In the OPEN statement, both the filename and the filenum are given. After this, in the PRINT#, INPUT#, GET#, and CLOSE statements, the filenum is used as shorthand to refer to the file.

For example

OPEN 5, , "FILE1"	open file for writing
PRINT# 5, "This is file 1"	
CLOSE 5	5 is the filenum

COMMAND SUMMARY

COMMAND

CLOSE filename	close a file which was opened for reading or writing
GET# filename, varlist	read a file a character at a time
INPUT# filename, varlist	read data, strings, or numbers from a file
LOAD ["filename"] [, 1] LOAD ["filename"] [, 1], 1	read in a BASIC program read in a machine program
OPEN filename, [1] [, 0] [, "filename"] OPEN filename, [1], 1, "filename"	open a file for input open a file for output
PRINT# filename, varlist	write variables to a file
SAVE "filename" [, 1]	save a program to the microwafer
ST	Variable, ST, indicates status of the previous command
VERIFY ["filename"] [, 1]	Compares the memory contents with what's on the wafer

CLOSE

COMMAND

Format: CLOSE filename

Purpose: The CLOSE command terminates access to a file. For each open file, a CLOSE statement MUST be executed prior to ENDing a program.

Example:

```
10 OPEN 1, 1, 1, "MYFILE"  
60 PRINT# 1, "HELLO"  
100 CLOSE 1  
110 END
```

Open a file for writing
write to it
close the file

GET#

COMMAND

Format: GET# filename, varlist

Purpose: The GET# command is used to read files one character at a time. For each variable in the varlist of a GET# statement, one character is read from the file. This character is assigned to the next variable in turn, and then the pointer (to the current position in the file) is moved.

NOTE: GET# can only be used in program mode

Example:

```
100 GET#8 A$           get one character and put in A$  
500 GET#8 B, C, D      get three characters
```

INPUT

COMMAND

Format: INPUT# filename, varlist

Purpose: INPUT# reads data from a file

The file which was OPENed with filename will be read. Each of the variables included in the INPUT statement will have a value assigned to it, and the current position in the file will be advanced by that number of places.

Examples of INPUT# statement

10 INPUT#1,A\$

input a string

10 INPUT#1,A,B,C

input three numbers

LOAD

COMMAND

Format: LOAD ["filename"] [,1] [,0/1]

Purpose: This command reads a program into memory from the Quick Data Drive.

The device number [,1] is optional, with 1 as the default value.

The parameter [0/1] is also optional. Its only use is for absolute loading. Normally, all programs are loaded starting at the beginning of the BASIC text area. Machine language programs often need to be loaded somewhere else. By using a 1 the program will be loaded to the area of memory that it was saved from.

NOTE: On the normal Datacenter omission of filename results in the next file on the tape being loaded. On the Quick Data Drive, omission of filename causes QDS to load the first BASIC program on the water.

Example commands:

LOAD	— LOAD first program from drive 0
LOAD "TEST"	— LOAD the file "TEST"
A\$ = "FILE1" : LOAD A\$	— LOAD the file " the file "FILE1"
LOAD "ABC", 1, 1	— LOAD the file "ABC" to address on file header
LOAD "1- FILE1"	— LOAD the file "FILE1" from Quick Data Drive 1.

Possible error conditions:

LOAD (9*2)	causes	"ILLEGAL FILENAME"
LOAD "NDSUCHFILE"	causes	"FILE NOT FOUND"
LOAD "VERYLONGFILE"	causes	"OUT OF MEMORY"
LOAD "TEST", 7	causes	"DEVICE NOT PRESENT"

OPEN COMMAND

Format: OPEN filenum, [, 1] [, 0/1/2] [, "filename"]

Purpose: The OPEN statement opens a file for input or output, as desired.

Only one file can be opened at a time per Quick Data drive. Before a second file can be OPENED on that drive, the first file must be CLOSED.

Filenum identifies the file throughout the rest of the program. Any subsequent PRINT#, INPUT#, CLOSE, or GET# refers to this filenum.

The default for the device ([, 1]) is 1, the device number for the Quick Data Drive. If no number is specified, then the QDS automatically assumes that the file is located on the Quick Data Drive.

The parameter [0/1/2] should be 0 for reading from a Microwafer file, and 1 or 2 for writing to a Microwafer file. If omitted, the file is opened for reading.

The "filename" should be included for every file which you store. If omitted when reading files, the first sequential file on the wafer will be read.

NOTE: In parameter [0/1/2], there is no difference between options 1 and 2.

Examples of OPEN statement:

- | | |
|------------------------------|--|
| 10 OPEN 4, 1, 1, "TRIAL.TXT" | Opens "TRIAL.TXT", for writing.
Assign it filenum 4. |
| 10 OPEN 6, 1, 0, "READ.TXT" | Opens "READ.TXT" for reading.
Assign filenum 6 to it. |
| 10 OPEN 4, , , "1:TRIAL.TXT" | Opens "TRIAL.TXT" for reading
on Quick Data Drive 1. |

PRINT# COMMAND

Format: PRINT# filename, varlist

Purpose: The PRINT# command outputs information to a file.

In PRINTING data to a file, it is important to print it in such a way that it can be read back in by the INPUT# statement. Punctuation must be included if the INPUT# statement expects it.

NOTE: The QDS buffers up to 2K bytes of data before turning on the Quick Data Drive. When the file is CLOSED, any data remaining in the buffer is written to the wafer.

Examples of PRINT# statement:

10 PRINT# 5, A	write a number
10 PRINT# 6, A, ":", B\$, ":", C	write number, string, number

SAVE COMMAND

Format: SAVE "filename" [, 1]

Purpose: The SAVE command writes out a program to the Microwafer. Each file name on a wafer must be unique, two files on the same wafer must not have the same filename.

The device [, 1] is optional and defaults to device # 1, the cassette port.

NOTES

When using the Datacorder, filename can be optional. However, when using the Quick Data Drive, filename must be given.

"FMD" is a reserved name which cannot be assigned to any file in the system.

Examples

SAVE "MYFILE"	Saves "MYFILE" to Quick Data Drive 0.
SAVE "1-MYFILE"	Saves "MYFILE" to Quick Data Drive 1.
SAVE "OTHERFILE", 1	Saves "OTHERFILE" to drive 0.

STATUS COMMAND

Format: ST

Purpose: ST gives a BASIC program a method of determining whether an error was made in accessing a Microwafer.

ST is a protected variable which returns the effect the previous I/O operation. ST should be checked immediately after the I/O operation, before any other commands are executed.

For Quick Data operations, values are assigned to ST which carry different meanings than for other peripherals. The chart below gives the meanings of each bit in ST. ST can have any sum of the values below.

ST Value	Message	Meaning
1	WAFFER NOT PRESENT	No wafer in drive
2	WAFFER WRITE PROTECTED	Attempt to write to write-protected wafer.
4	TIMEDOUT ERROR	expected event did not occur within expected time bound.
8	FILE EXISTS	Attempt to use duplicate file name, or "FMU"

16	NO ROOM ON WAFER	File too long for wafer
32	NOT A QUICK DATA DRIVE	Attempt to access a Quick Data Drive when it is not attached
64	NO MESSAGE GIVEN	End-of-File encountered in reading. Terminates normal file-reading

NOTES: When reading files, ST returns the End-of-File indication when there is one character left in the buffer to be read.

Example of ST variable:

```
10 IF ST > 64 THEN 600          REM HANDLE END-OF-FILE
```

VERIFY COMMAND

Format: VERIFY ["filename"] [, 1]

Purpose: This command is used immediately after a SAVE, in order to check what was SAVED. This command checks memory against the wafer.

The device [, 1] is optional; if it is omitted, then device #1 is used.

NOTES: The parameter "filename" is optional. When using the Datacorder, omission of filename causes the DOS to verify against the first file found on the wafer. When using the Quick Data Drive, omission causes DOS to verify against the FIRST file.

Examples:

VERIFY "THISFILE"	Verifies the program in memory against the file "THISFILE", on drive 0.
VERIFY "THISFILE", 1	Verifies the program in memory against the file "THISFILE", on drive 0.
VERIFY "1, NEWFILE"	Verifies the program in memory against the file "newfile", on drive 1.

CHAPTER 3 COMMANDS

FILE MANAGER UTILITYCOMMANDS

WHY A FILE MANAGER UTILITY?

The File Manager Utility (FMU) gives a convenient menu driven program for copying files, formatting wafers, displaying directories, and creating OOS wafers. These utilities are necessary for preparing wafers for use and for organizing the files on wafers.

STARTING THE FMU

When OOS is running type LOAD "FMU" If the message "INSERT OOS WAFER" is displayed, then insert the OOS wafer and type RETURN. A menu will then be displayed, from which you can choose

QUICK DATA DRIVE FILE MANAGER UTILITY V1.00 COPY-
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COPY FILE FROM

- A) CASSETTE TO WAFER
- B) DISK TO WAFER
- C) WAFER TO WAFER
- D) WAFER TO CASSETTE
- E) WAFER TO DISK

MISCELLANEOUS

- F) DISPLAY WAFER DIRECTORY
- G) FORMAT WAFER
- H) CREATE OOS WAFER
- I) CLEAN WAFER DRIVE
- J) EXIT

YOUR SELECTION? _____

Now, type the letter of the desired selection (followed by a return), and that selection will be highlighted.

NOTE The FMU may get overwritten by some application programs. When LOAD "FMU" is typed, OOS checks to see if the FMU is in memory. If it is not in memory, then the "INSERT OOS WAFER" message is displayed and the FMU will be read in.

ABORTING A COMMAND

In order to abort an FMU command, type the "RESTORE" key. You will be returned to the FMU menu.

COPY FILE FROM CASSETTE TO WAFER

File Management Utility Command

Format:

COPY FILE FROM:

A) CASSETTE TO WAFER

YOUR SELECTION? A

FROM FILE? [filename]

PROGRAM OR SEQUENTIAL FILE? [PRG/SEQ]

TO FILE? [filename]

Purpose: This command copies a file from your Datacorder onto Microwafer.

With the Quick Data Drive plugged into the Commodore computer and the Datacorder plugged into the back of the Quick Data Drive, load the FMU and select utility A.

The FMU then asks for the filename. If the cassette filename is omitted, the next file found on the cassette will be copied.

Since there can be both a sequential and a program file with the same name, the FMU then asks for PRG or SEQ to be typed in. If the RETURN key is pressed, the default PRG is assumed.

After the filename to be written on the Microwafer is typed in, the FMU will prompt with the message, "PRESS PLAY ON CASSETTE". The file will then be read from the Datacorder to the Microwafer drive. If the Microwafer filename is omitted, then it will be given the same name as on the cassette.

Example:

YOUR SELECTION? A	ORIG.TXT is the filename
FROM FILE? ORIG.TXT	on the cassette.
PROGRAM OR SEQUENTIAL FILE? SEQ	It is a data file
TO FILE? NEWCOPY.TXT	NEWCOPY.TXT is the file
5144 BYTES COPIED	written on the wafer.
FILE COPIED	
PRESS RETURN TO CONTINUE	

COPY FILE FROM DISK TO WAFER

File Management Utility Command

Format:

COPY FILE FROM
B) DISK TO WAFER

YOUR SELECTION? B
FROM FILE? [filename]
PROGRAM OR SEQUENTIAL FILE? [PRG/SEQ]
TO FILE? [filename]

Purpose: This utility copies a file from a Commodore disk drive to the Microwafer.

The filename on the disk can be preceded by a 0- or a 1- to specify the 0- or 1 disk drive.

If the disk filename is omitted, the first file on the disk will be copied.

If PRG/SEQ is omitted, the PRG is assumed.

If the wafer filename is omitted, the disk file name will be used.

COPY FILE FROM WAFER TO WAFER

File Management Utility Command

Format

COPY FILE FROM

C) WAFER TO WAFER

YOUR SELECTION? C

FROM FILE? [filename]

PROGRAM OR SEQUENTIAL FILE? [PRG/SEQ]

TO FILE? [filename]

Purpose This utility copies a file from one Quick Data Drive to another.

If the FROM filename is omitted, then the first file on drive 0 is assumed.

If the program type, PRG/SEQ is omitted, PRG is assumed.

If the TO filename is omitted, then the FROM filename is used.

If a file is to be copied to the the same drive. Then the PMU will prompt,

INSERT "FROM" WAFER (insert and hit return)

INSERT "TO" WAFER (insert and hit return)

Example Copying from one Microwafer to another on a single Quick Data Drive.

YOUR SELECTION? C

FROM FILE? MEMO

PROGRAM OR SEQUENTIAL FILE? SEQ

TO FILE? (return)

INSERT FROM WAFER:	(return)
INSERT TO WAFER	(remove the first wafer, insert the second and hit return)

Example: Copying from one Microwafer to another using two Quick Data Drives

YOUR SELECTION? C	MEMO will be copied
FROM FILE? 0 MEMO	from drive 0 to
PROGRAM OR SEQUENTIAL FILE? SEQ	drive 1 where it will
TO FILE? 1 MEMO.BAK	be called MEMO.BAK

COPY FILE FROM WAFER TO CASSETTE

File Management Utility Command

Format:

COPY FILE FROM:

D) WAFER TO CASSETTE

YOUR SELECTION? D
FROM FILE? [filename]
PROGRAM OR SEQUENTIAL FILE? [PRG/SEQ]
TO FILE? [filename]

Purpose: This utility copies a file from the Microwafer to the cassette drive.

If the Microwafer filename is omitted, the first file on the wafer is assumed.

If PRG/SEQ is omitted, PRG is assumed.

If the cassette filename is omitted, then the Microwafer file name is used.

Example:

Q) WAFER TO CASSETTE

YOUR SELECTION? Q
FROM FILE? 1- GAME 4
PROGRAM OR SEQUENTIAL FILE?
TO FILE? (hit return)

GAME 4 will be copied
from the drive D to the
cassette.

COPY FILE FROM WAFER TO DISK

File Management Utility Command

Format:

COPY FILE FROM

E) WAFER TO DISK

YOUR SELECTION? E
FROM FILE? [filename]
PROGRAM OR SEQUENTIAL FILE? [PRG/SEQ]
TO FILE? [filename]

Purpose: This utility copies a file from the Microwafer to the disk drive.

If the Microwafer filename is omitted, the first file on the wafer is assumed.

PRG is the default for PRG/SEQ.

If the disk filename is omitted, then the Microwafer file name is used.

Example:

Q) WAFER TO CASSETTE

YOUR SELECTION? Q
FROM FILE? 1- GAME 4
PROGRAM OR SEQUENTIAL FILE?
TO FILE? (hit return)

GAME 4 will be copied
from the drive Q to the
disk.

DISPLAYING THE WAFER DIRECTOR

File Management Utility Command

Format:

F) DISPLAY WAFER DIRECTORY

YOUR SELECTION? F

WHICH DRIVE? (0/1)

Purpose: This command is used to display the Microwafer directory, a list of the files on the wafer.

The directory command will print on the screen the wafer ID header name, plus the names, file types, and lengths of all files on the wafer. A message will also be printed, showing the number of bytes free on the wafer.

If the directory list takes more than one screen, a message, "MORE" will be displayed. Any character will bring the next screenful. Pressing the RESTORE key will abort the command.

Example:

YOUR SELECTION? F

WHICH DRIVE? 0

FETCHING DIRECTORY .

0 TEST WAFER #1 0

INVADERS	P 8634	GAME4	P 11642
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PAC-MAN	P 3769		
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3 FILES USED

24245 BYTES USED

11115 BYTES FREE

PRESS RETURN TO CONTINUE

FORMATTING A MICROWAFER

File Management Utility Command

Format:

G) FORMAT WAFER

YOUR SELECTION? G

WHICH DRIVE? [0/1]

WAFER ID? wafername

Purpose: A Microwafer must be formatted before files may be written upon it.

Upon selecting "FORMAT WAFER" you will be asked for the drive number to be formatted and then for the name which you like to assign to the wafer. Type in this name, and press return.

The wafername can be up to 12 characters in length. It will appear on the top line whenever a directory for the wafer is displayed.

CAUTION: Formatting removes any data previously stored on the wafer. Before formatting, copy onto another wafer any files you may wish to save.

Example:

YOUR SELECTION? G

WHICH DRIVE? (return)

WAFER ID? MYWAFER

FORMATTING WAFER...

65172 BYTES FREE

PRESS RETURN TO CONTINUE

drive 0 will be formatted

call the wafer "MYWAFER"

CREATING A QOS WAFER

File Management Utility Command

Format

H) CREATE QOS WAFER

YOUR SELECTION? H

WHICH DRIVE? (0/1)

Purpose: This function makes backup copies of the Quick Operating System wafer.

To use, insert a Microwafer, at least 35 foot (84K), into a Quick Data Drive and select FMU function H. Type in the drive number 0 or 1 and the new QOS wafer will be made.

NOTE The Master QOS Wafer from Entropo contains QOS and FMU programs for both the Commodore 64 and the VIC 20. Wafers written by this command contain only the QOS and the FMU for the computer being used. Thus a QOS wafer created on Commodore 64 will only work on a Commodore 64.

Example:

YOUR SELECTION? H

WHICH DRIVE? 0

CREATING QOS WAFER...

QOS WAFER CREATED

PRESS RETURN TO CONTINUE

CLEANING THE QUICK DATA DRIVE

File Management Utility Command

Format:

1) CLEAN WAFER DRIVE

YOUR SELECTION? 1

WHICH DRIVE? [0/1]

Purpose: The Quick Data Drive should be cleaned every few weeks of normal usage. A special cleaning Microwafer is available which removes residue buildup on the read/write head.

To clean the drive, insert the Cleaning Microwafer in the Quick Data Drive and run this FMU cleaning utility. The motor will run for about 30 seconds. Then remove the cleaning wafer.

Example:

(Entrepo Cleaning Wafer already inserted in the Quick Data Drive #0)

YOUR SELECTION? 1

WHICH DRIVE? 0

CLEANING WAFER DRIVE

WAFER DRIVE CLEANED

PRESS RETURN TO CONTINUE

EXITING THE FMU

File Management Utility Command

Format.

J) EXIT

YOUR SELECTION? J

Purpose This command is used leave the FMU menu and go back to the BASIC interpreter.

Upon exit, the screen will be cleared and the computer will be immediate mode ready to accept new BASIC statements or commands.

CHAPTER 4 HELPFUL HINTS

CARE OF YOUR MICROWAFER (TM) DATA CARTRIDGES

Because of the tough construction of your Microwafers, very little has to be done to care for them. A few points should be kept in mind:

- 1) DON'T leave Microwafers in very hot places, such as a hot dashboard, or the top of a stove.
- 2) DON'T leave Microwafers in a very humid place, such as a hot shower.
- 3) DON'T operate the Quick Data Drive upside-down or on its side.
- 4) DON'T remove a Microwafer while the red light is on.

INSERTION, REMOVAL, AND LABELING OF MICROWAFERS

Putting the Microwafer into your Quick Data Drive is easy. The cartridge only goes in one way, the large straight arrow molded into the top of the Microwafer shows which way it goes in.



(Figure 5)

Insertion of Microwafer into the Quick Data Drive

Your Microwafers provide a location for labeling of each Microwafer. It is a good idea to label every Microwafer with its contents, so you don't lose track of your files and programs.



(Figure 6)

WRITE PROTECTION OF MICROWAFERS

You may want to protect information on a wafer from ever being erased.

To write protect a wafer knock out the little slot. If the knockout is not present, the drive will not be able to write over the data on the wafer (See figure 5)

WAFFER ACCESS TIME VS CAPACITY

The time to access a file depends upon the length of the wafer and the distance of the file from the beginning

To optimize performance, use as short a wafer as possible for the application

STORAGE CAPACITY AND AVERAGE ACCESS TIME

TAPE LENGTHG (FEET)	CAPACITY (1 FILE)	AVG. ACCESS TIME (SEC)
10	15K	8
20	35K	15
35	65K	25
50	95K	34
62	120K	43

ERROR MESSAGES

WAFER NOT PRESENT — There was no wafer in the Quick Data Drive when a command was issued.

WAFER WRITE PROTECTED — The write protect notch on the wafer is knocked out when a **SAVE** or **PRINT#** was executed.

TIMEOUT ERROR — The expected event did not occur within expected time bound.

FILE EXISTS — The file name to be written already exists on the wafer. You cannot replace or delete a file on a wafer without reformatting it.

NO ROOM ON WAFER — When writing, all the room on the wafer was used up. Use another wafer.

NOT A QUICK DATA DRIVE — There is no Quick Data Drive corresponding to the drive number specified. You probably typed in something other than 0 or 1 for the Quick Data Drive number.

ILLEGAL FILE NAME — The file name must start with a letter of the alphabet.

FILE NOT FOUND — The file to be loaded or read could not be found on the wafer.

OUT OF MEMORY — The program loaded was too big for the available memory.

WAFER NOT PRESENT — There is no wafer inserted in the Quick Data Drive.

NOT A CLEANING WAFER — The **FMU** command to clean the wafer was issued without a cleaning wafer in the drive.

MEMORY MAP

Care must be taken to avoid using programs which interfere with QOS. When QOS is loaded, it occupies locations C000 to CFFF. It must remain intact for the Quick Data Drive to function reliably.

The FMU, on the other hand, may be overwritten by the user's program. It resides in the shadow RAM underneath the BASIC ROM.

Commodore 64 memory after QOS is loaded

	ACTIVE MEMORY	SHADOW MEMORY
E000—FFFF	8K KERNAL ROM	
D000—DFFF	4K I/O	
C000—CFFF	Quick Operating System (QOS)	
B000—BFFF	8K BASIC ROM	File Management Utility (FMU)
A000—AFFF		default sequential file buffer
9000—9FFF	8K RAM	
8000—7FFF	16K RAM	
0000—3FFF	16K RAM	

UPDATE

Entropo has improved QOS. The amount of storage on a wafer has been increased by 50% and load and save times are substantially reduced. The following are addenda to the manual that reflect those improvements.

New Command: DELETE

format: H)
I) DELETE WAFER FILE
J) CLEAN WAFER DRIVE
K) EXIT

Purpose: This command is used to remove a file from the wafer so that the filename may be reused. Deleting the file does not reclaim the space used by the file, but simply makes it inaccessible.

Clean wafer drive is changed from menu item I to item J

Exit is changed from menu item J to K.

The file capacities and access times referred to on pages 5 and 35 are now:

TAPE LENGTH (in feet)	CAPACITY (1 file)	AVE ACCESS TIME (sec)
10	25K	8
20	53K	17
35	92K	31
50	138K	44
62	170K	55

The New Quick operating system contained on this Microwafer will only operate on the Commodore 64. A separate version is available for VIC 20 users.

Line 30 in the example on page 18 should read: 30 PRINT 1, "Hello"
C583